Following Are Bharath Sanchar Nigam Limited (BSNL) Junior Telecom Officers (JTO) Exam Paper::–

If the voltage applied across a capacitance is triangular in waveform then the waveform of the current is-
a) Triangular
b) Trapezoidal
c) Sinusoidal
d) Rectangular
Answer is :- Rectangular

1. One of the following statement which is true for relative dielectric constant is -
a) It is dimensionless
b) It is not equal to unity for vacuum
c) It's value for all substances is less than one
d) None
Answer is :- It is dimensionless

2. Pure metals generally have-
a) high conductivity and low temperature coefficient
b) high conductivity and large temperature coefficient
c) low conductivity and zero temperature coefficient
d) low conductivity and high temperature coefficient
Answer is :- high conductivity and large temperature coefficient

3. For small size, high frequency coils, the most common core material is
a) Air
b) Ferrite
c) Powdered ion
d) Steel
Answer is :- Air

4. For an abrupt junction Varactor diode, the dependence of device capacitance (C) on applied reverse bias (V) is given by-
a) C a V1/3
b) C a V-1/3
c) C a V1/2
d) C a V-1/2
Answer is :- C a $V^{-1/3}$

5. A superconductor is a-
a) A material showing perfect conductivity and Meissner effect below a critical temperature
b) A conductor having zero resistance
c) A perfect conductor with highest dimagnetic susceptibility
d) A perfect conductor which becomes resistive when the current density through it exceeds a critical value

Answer is :-A material showing perfect conductivity and Meissner effect below a critical temperature

6. When a semiconductor based temperature transducer has a temperature coefficient of –2500 mV/0C then this transducer is indeed a-
a) Thermistor
b) Forward biased pn junction diode
c) Reverse biased pn junction diode
d) FET
Answer is :- Forward biased pn junction diode

7. The location of lightning arrestor is -
a) Near the transformer
b) Near the circuit breaker
c) Away from the transformer
d) None
Answer is :- Near the transformer

8. Time constant of an RC circuit increases if the value of the resistance is -
a) Increased
b) Decreased
c) Neither a nor b
d) Both a and b
Answer is :- Increased

9. Intrinsic semiconductors are those which -
a) Are available locally
b) Are made of the semiconductor material in its purest from
c) Have more electrons than holes
d) Have zero energy gaps
Answer is :- Are made of the semiconductor material in its purest from

10. The primary control on drain current in a JFET is exerted by -
a) Channel resistance
b) Size of depletion regions
c) Voltage drop across channel
d) Gate reverse bias
Answer is :- Gate reverse bias

11. The electrical conductivity of metals which is expressed in ohm-1 m-1 is of the order of -
a) 1010
b) 105
c) 10-4
d) 10-6
Answer is :- 10^5

12. When biased correctly, a zener diode –
a) acts as a fixed resistance
b) has a constant voltage across it
c) has a constant current passing through it
d) never overheats
Answer is :- has a constant voltage across it

13. The current amplification factor adc is given by –
a) IC/IE
b) IC/IB
c) IB/IC
d) IB/IC
Answer is :- I_C/I_E

14. Compared to bipolars, FETs have-
a) high input impedance
b) low input impedance
c) same input impedance
d) none
Answer is :- high input impedance

15. The source-drain channel of JFET is -
a) ohmic
b) bilateral
c) unilateral
d) both a and b
Answer is :- both a and b

16. diac is equivalent to a -
a) Pair of SCRs
b) Pair of four layer SCRs
c) Diode and two resistors
d) Triac width
Answer is :- Pair of four layer SCRs

17. When a sample of N type semiconductor has electron density of 6.25 ´ 1011 /cm3 at 300K and if the intrinsic concentration of carriers in this sample is 2.5 ´ 1013/cm3 then the hole density will be –
a) 106/cm3
b) 103/ cm3
c) 1010/ cm3
d) 1012/ cm3
Answer is :- 10^3/ cm^3

18. The statement ‘In any network of linear impedances, the current flowing at any point is equal to the algebraic sum of the currents caused to flow at that point by each of the

sources of emf taken separately with all other emf's reduced to zero' represents -
a) Kirchhoff's law
b) Norton's theorem
c) Thevenin's theorem
d) Superposition theorem
Answer is :- Superposition theorem

19. One of the following modes which has the characteristics of attenuation becoming less as the frequency is increased and is attractive at icrowave frequencies of circular cylindrical wave guides is –
a) TE1 mode
b) TM01 mode
c) TE01 mode
d) Higher order mode
Answer is :- TE_{01} mode

20. A two-port network is symmetrical if –
a) z11z22 – z12z21 = 1
b) h11h22 – h12h21 = 1
c) AD – BC = 1
d) y11y22 – y12y21 = 1
Answer is :-AD – BC = 1

21. For transmission line load matching over a range of frequencies, it is best to use a-
a) balun
b) broad band directional coupler
c) double stub
d) single stub of adjustable position
Answer is :- double stub

22. The poles and zeros of a driving point function of a network are simple and interlace on the negative real axis with a pole closest to the origin. It can be realised -
a) by an LC network
b) as an RC driving point impedance
c) as an RC driving point admittance
d) only by an RLC network
Answer is:- only by an RLC network

23. Poles and zeros of a driving point function of a network are simple and interlace on the jw axis. The network consists of elements –
a) R and C
b) L and C
c) R and L
d) R, L and C
Answer is :- L and C

24. For a two port reciprocal network, the output open circuit voltage divided by the input current is equal to –
a) B
b) Z12
c) —
d) h12
Answer is :- Z_{12}

25. In a short electric doublet the radiation properties are so that-
a) The induction field diminishes as the square root of the distance and is only appreciable in the vicinity of the conductor.
b) In the radiation, magnetic field is minimum when the current is maximum.
c) The radiation resistance of a short doublet antenna is extremely high.
d) Mean rate of power through a unit area of spherical sphere surrounding this doublet is proportional to the square of the elemental length, other factors remaining constant.
Answer is :-Mean rate of power through a unit area of spherical sphere surrounding this doublet is proportional to the square of the elemental length, other factors remaining constant.

26. The frequency modulated (FM) radio frequency range is nearly -
a) 250 –300 MHz
b) 150 – 200 MHz
c) 90 – 105 MHz
d) 30-70 MHz
Answer is :-90 – 105 MHz

27. In an underground cable the distortion in the transmission of carrier frequency can be eliminated by using -
a) Inductive loading
b) Resistive loading
c) Capacitive loading
d) Shielding
Answer is :- Inductive loading

28. The characteristic impedance of a transmission line with inductance 0.294 mH /m and capacitance 60 pF/m is -
a) 49 W
b) 60 W
c) 70 W
d) 140 W
Answer is :- 70 W

30. For a quarter wavelength ideal transmission line of characteristic impedance 50 ohms and load impedance 100 ohms, the input impedance will be –
a) 25W
b) 50W

c) 100W
d) 150W
Answer is :- 25W

31. The depth of penetration or skin depth for an electromagnetic field of frequency ‘f’ in a conductor of resistivity r and permeability m is-
a) inversely proportional to r and f and directly proportional to m
b) directly proportional to r and inversely proportional to f and m
c) directly proportional to f and inversely proportional to r and m
d) inversely proportional to r and m and directly proportional to f
Answer is :- directly proportional to r and inversely proportional to f and m

32. When an antenna has a gain of 44dB then assuming that the main beam of the antenna is circular in cross-section the beam width will be -
a) 0.4456 0
b) 1.44560
c) 2.44560
d) 3.44560
Answer is :- 2.4456^0

33. Lens antennas used for microwaves are usually made of -
a) Polystyrene
b) Glass of low refractive index
c) Paraboloid surfaces
d) Dielectric media having large refractive index
An,
34. One of the following types of instrument which is an electrometer is -
a) Electrodynamometer
b) PMMC
c) Electrostatic
d) Moving iron
Answer is :- Electrostatic

35. When an ac current of 5A and dc current of 5A flow simultaneously through a circuit then which of the following statement is true ?
a) An ac ammeter will read less than 10A but more than 5A
b) An ac ammeter will read only 5A
c) A dc ammeter will read 10A
d) A dc ammeter will read zero
Answer is :- An ac ammeter will read less than 10A but more than 5A

36. When Q factor of a circuit is high, then -
a) power factor of the circuit is high
b) impedance of the circuit is high
c) bandwidth is large

d) none of these
Answer is :- none of these

37. The resolution of a logic analyser is -
a) the maximum number of input channels
b) the minimum duration of the glitch it can capture
c) it's internal clock period
d) the minimum amplitude of input signal it can display
Answer is :- the minimum amplitude of input signal it can display

38. A memoryless system is –
a) causal
b) not causal
c) nothing can be said
d) none
Answer is :- causal

39. An air capacitor is a –
a) time variant
b) active device
c) time invariant
d) time invariant and passive device
Answer is :-time invariant and passive device

40. Thermistors are made of -
a) pure metals
b) pure insulators
c) sintered mixtures of metallic oxides
d) pure semiconductor
Answer is :- sintered mixtures of metallic oxides

41. Pirani gauge is used to measure –
a) very low pressures
b) high pressures
c) pressures in the region of 1 atm
d) fluid flow
Answer is :- very low pressures

42. These circuits converts input power at one frequency to output power at a different frequency through one stage conversion –
a) AC voltage controllers
b) Cyclo converters
c) Phase controlled rectifiers
d) Inverters
Answer is :-Cyclo converters

43. In a forward voltage Triggering thyristor changes from –
a) off state to on state
b) on state to off state
c) on state to on state
d) off state to off state
Answer is :- off state to on state

44. A thyristor, when triggered, will change from forward blocking state to conduction state if its anode to cathode voltage is equal to -
a) peak repetitive off state forward voltage
b) peak working off state forward voltage
c) peak working off state reverse voltage
d) peak non-repetitive off state forward voltage
Answer is :- peak working off state forward voltage

45. Gate characteristic of a thyristor-
a) is a straight line passing through origin
b) is of the type Vg = a + bIg
c) is a curve between Vg and Ig
d) has a spread between two curves of Vg – Ig
Answer is :-has a spread between two curves of V_g – I_g

46. A four quadrant operation requires-
a) two full converters in series
b) two full converters connected back to back
c) two full converters connected in parallel
d) two semi converters connected back to back
Answer is :-two full converters connected back to back

47. If for a single phase half bridge inverter, the amplitude of output voltage is Vs and the output power is P, then their corresponding values for a single phase full bridge inverter are –
a) V_s, P
b) Vs/2, P
c) $2V_s$, 2P
d) $2V_s$, P
Answer is :- $2V_s$, 2P

48. In an enhancement type MOSFET the output V-I characteristics has –
a) only an ohmic region
b) only a saturation region
c) only ohmic region at 10 W voltage value followed by a saturation region at higher voltages
d)an ohmic region at large voltage values preceded by a saturation region at lower voltages

Answer is :- only ohmic region at 10 W voltage value followed by a saturation region at higher voltages

49. The energy gap in a semiconductor -
a) increases with temperature
b) remains constant
c) slightly increase with temperature
d) decrease with temperature
Answer is :-decrease with temperature

50. In an electronic circuit matching means -
a) connecting a high impedance directly to low impedance
b) selection of components which are compatible
c) transferring maximum amount of signal between different kinds of circuits.
d) RC coupled stages
Answer is :-transferring maximum amount of signal between different kinds of circuits.

51. P channel FETs are less superior than N channel FETs because
a) They have higher input impedance
b) They have high switching time
c) They consume less power
d) Mobility of electrons is greater than that of holes
Answer is :- Mobility of electrons is greater than that of holes

52. Small increase in temperature in the CE connected transistor is the -
a) Increase in ICEO
b) Increase in ac current gain
c) Decrease in ac current gain
d) Increase in output resistance
Answer is :- Increase in I_{CEO}

53. An amplifier has a band width of 20 KHz and a midband gain of 50 without feedback. If a negative feedback of 1% is applied then bandwidth with feedback is -
a) 13. 3 KHz
b) 30KHz
c) 10KHz
d) 40KHz
Answer is :- 30KHz

54. The output of a class B amplifier -
a) is distortion free
b) consists of positive half cycles only
c) is like the output of a full wave rectifier
d) comprises short duration current pulses
Answer is :- consists of positive half cycles only

55. An amplifier with negative feedback -
a) lowers its lower 3 dB frequency
b) raises its upper 3 dB frequency
c) increases its bandwidth
d) all of the above
Answer is :- all of the above

56. What changes would be necessary in block C if FM signals are to be received -
a) Block becomes redundant
b) A FM detector would be required
c) A high frequency signal generator
1d) An additional local oscillator will be needed
Answer is :- A FM detector would be required

57. The main disadvantage of Diode-Transistor logic (DTL) is its-
a) greater speed
b) slower speed
c) average speed
d) none of the above
Answer is :- slower speed

58. Time delay Dt in digital signals in an SIS O shift register is given by –
a) Dt = N ´ Fc
b) Dt = N ´ 1/Fc
c) Dt = 1/N ´ Fc
d) Dt = N ¸ 1/Fc
Answer is :- Δt = N ´ 1/Fc

59. The output Qn is 1 in a JK flip flop and it does not change when clock pulse is applied) The possible combination of Jn and Kn can be –
(y denotes don't care)
a) y and 0
b) y and 1
c) 0 and y
d) 1 and y
Answer is :- y and 0

60. Basic memory cell of dynamic RAM consists of –
a) a flip flop
b) a transistor acting as a capacitor
c) a transistor
d) a capacitance
Answer is :- a transistor acting as a capacitor

61. The 2's complement of 10002 is –
a) 0111

b) 0101
c) 1000
d) 0001
Answer is :-1000

62. Master slave flip-flop is made up of –
a) two flip flops connected in series
b) two flip flops connected in parallel
c) a debouncer circuit
d) a-D- latch
Answer is :-two flip flops connected in series

63. Number of nybbles making one byte is –
a) 2
b) 4
c) 8
d) 16
Answer is :- 2

64. The intrinsic impedance of free space-
a) is independent of frequency
b) decreases with increase of frequency
c) increases with increase of frequency
d) varies as square root of frequency
Answer is :-is independent of frequency

65. A system consists of 12 poles and 2 zeroes. Its high frequency asymptote in its magnitude plot has a slope of -
a) –200 dB/decade
b) –240 dB/decade
c) –230 dB/decade
d) –320 dB/decade
Answer is :- –200 dB/decade

66. Considering the conditions-
1. High loop gain 2. Less ringing 3. Greater damping 4 Negative dB gain margin
System stability requirements would include?

a) 1 and 3
b) 1, 2 and 3
c) 1 and 4
d) 2, 3 and 4
Answer is :-2, 3 and 4

swer is :- Polystyrene

,
67. In the equatorial plane only Geosynchronous satellite are launched because it is the only plane which provides –
a) 24 hour orbit
b) stationary satellite
c) global communication
d) zero-gravity environs
Answer is :- stationary satellite

68. Radio Broadcasting is an example of –
a) space multiplexing
b) time multiplexing
c) frequency multiplexing
d) none of the above
Answer is :- frequency multiplexing

69. PAM signals can be demodulation by using a –
a) Low pass filters (LPE) alone
b) A Schmitt trigger followed by a LPF
c) A differentiator followed by a LPF
d) A clipper circuit by a LPF
Answer is:- A clipper circuit by a LPF

70. In an FDM receiver channels can be separated by using –
a) AND gates
b) Band pass
c) differentiation
d) Integration
Answer is :- AND gates

71. The most common modulation system used for telegraphy is-
a) frequency shift keying
b) two – tone modulation
c) pulse code modulation
d) single tone modulation
Answer is :- frequency shift keying
72. Use of varoctor diode in generation of modulated segial be-
a) FM generation only
b) 100AM generation only
c) PM generation only
d) both PM and AM generation
Answer is :- FM generation only

73. In colour picture tube shadow mask is used to-
a) reduce x-ray emission
b) ensure that each beam strikes only its own dots

c) increase screen brightness
d) provide degaussing for the screen
Answer is :- increase screen brightness

74. The circuit that separates composite video warefore from the sync pulses is-
a) the keyed AGC amplifar
b) a clipper
c) an integrator
d) a sawtooth current
Answer is :- a sawtooth current

75. Band width of microwaves is-
a) 1GHz -103 GHz
b) 1GHz –100 GHz
c) 1 GHz –10 GHz
d) 1 GHz – 106 GHz
Answer is :- 1GHz -10^3 GHz

76. In transverse Magnetic mode-
a) no electric line is in direction of propagation
b) no magnetic line is in direction of propagation
c) bath magnetic & electric lines are is direction of propagation
d) neither magnetic nor electric lines in direction of propagation
Answer is :- no magnetic line is in direction of propagation

77. Signal transmission in sky wave propagation is due to –
a) Reforction of wave
b) Reflection of wave
c) Pierus through Inosphere
d) None
Answer is :- Reforction of wave

78. According to Barkhausen Criterion Phase shift of signal should be –
a) 600^0
b) 900^0
c) 1800^0
d) 3600^0
Answer is :- 360^0

79. The transmission does not have -
a) Partition noise
b) Flicker noise
c) resistance
d) Short noise
Answer is :- Partition noise

80. Varoctor diode has non linearity of -
a) capacitance
b) Inductance
c) Resistance
d) Is a linear device
Answer is :- capacitance

81. Noise figure is calculated as –
a) i/p signal to noise ratio X o/p signal to noise ratio
b) i/p S/N Ratio / O/P S/N Ratio
c) i/p S/N Ratio / O/P S/N Ratio X 100
d) i/p S/N Ratio + O/P S/N Ratio
Answer is :- i/p S/N Ratio / O/P S/N Ratio

82. You can determine quickly the effect of adding poles and zeros by –
a) Nicholas chart
b) Nyquist plot
c) Bode plot
d) Root locus.
Answer is :- Bode plot

83. The polar plot of G(S) = intercepts real axis at w = wo. Then, the real part and wo are given by-
a) –5, 1
b) –2.5, 1
c) –5,0-5
d) –5, 2
Answer is :- –5, 1

84. Laplace transform F (s) of a function f (E) is given by $F(s)=10_s(s+7)/(s+1)(s+8)(s+10)$ The initial and final values of F (t) will be respectively-
a) zero and 1
b) zero and 10
c) 10 and zero
d) 70 and 80
Answer is :-10 and zero

85. A satellite link uses different frequencies for receiving and transmitting in order to –
a) avoid interference from terrestrial microwave links
b) avoid interference between its powerful transmitted signals and weak in coming signal
c) minimize free-space losses
d) maximize antenna gain
Answer is :- avoid interference between its powerful transmitted signals and weak in coming signal

86. The first determining factor in selecting a satellite system is its-
a) EIRP
b) Antenna size
c) Coverage area
d) Antenna gain
Answer is :- Coverage area

87. Equalizing pulses in TV are sent during-
a) horizontal blanking
b) vertical blanking
c) the serrations
d) the horizontal retrace
Answer is :-vertical blanking

88. The son seems to have ——— from his father a somewhat gloomy and moody manner-
a) washed
b) inherited
c) admired
d) attempt
Answer is :-inherited

89. Essayist works with words as sculptor with-
a) water
b) stone
c) air
d) hills
Answer is :- stone

90. What is a collection of sheep called ?
a) bunch
b) flock
c) herd
d) comet
Answer is :- flock

91. Join these sentences meaningfully by choosing the correct alternative from the following :
You can buy a book. You can read it.
a) and
b) nor
c) either
d) neither
Answer is :- and

92. What is the opposite of Asperity –
a) gentility
b) superiority
c) kindness
d) clarity
Answer is :- superiority

93. The Election Commission functions under-
a) Ministry of Home Affairs
b) Ministry of Law
c) Prime Minister's Secretariat
d) None of these
Answer is :-None of these

94. Article 352 of Indian Constitution needs to be revoked in case-
a) President's Rule is to be imposed
b) Emergency is declared
c) Services of a Government servant are to be terminated without any enquiry
d) A political party of national level is to be banned
Answer is :- Emergency is declared

95. Radio-activity was first discovered by-
a) Becquerel
b) Madam Curie
c) Rutherford
d) Jenner
Answer is :- Becquerel

96. Ninth Plan in India ranges from-
a) 1995-2000
b) 1996-2001
c) 1997-2002
d) 1998-2003
Answer is :- 1997-2002

97. How much electricity does India propose to generate through nuclear power by the year 2000 AD?
a) 5,000 MW
b) 10,000 MW
c) 15,000 MW
d) 20,000 MW
Answer is :- 10,000 MW

98. In which year did the fall of Bastille take place?
a) 1769
b) 1789

c) 1889
d) 1869
Answer is :- 1789

99. To form a quorum how many members of the Lok Sabha or Rajya Sabha should be present?
a) 1/10th of total membership
b) 1/6th of total membership
c) 1/4th of total membership
d) 1/5th of total membership
Answer is :- 1/10th of total membership

100. How may countries are non-permanent members of the Security Council?
a) 6
b) 7
c) 9
d) 10
Answer is :- 10

101. The International Date Line is represented by-
a) 100^0meridian
b) 00^0 meridian
c) 180^0meridian
d) 90^0 meridian
Answer is :- 180^0 meridian

102. India's first satellite was launched from-
a) Sriharikota
b) Cape Kennedy
c) Bangalore
d) A Soviet cosmodrome
Answer is :- A Soviet cosmodrome

103. Name the author of the famous book "Politics"-
a) Aristotle
b) Socrates
c) Plato
d) None of them
Answer is :- Aristotle

104. "Guernica" is Picasso's painting on-
a) The Spanish Civil War
b) The American Civil War
c) The French Revolution
d) The Russian Revolution
Answer is :- The Spanish Civil War

105. The object of the Supreme Court's Keshvanand Bharati ruling is -
a) To put a limit on Parliament's amendatory powers
b) To give unlimited powers to Parliament to amend the Constitution
c) To give precedence to Directive Principles over Fundamental Rights
d) None of these
Answer is :- To put a limit on Parliament's amendatory powers

106. Which country in July '99 officially announced mastering of indigenously developed neutron bomb technology?
a) N. Korea
b) France
c) India
d) China
Answer is :- China

107. Shifting cultivation is commonly used in which of the following states?
a) Tamil Nadu
b) Maharashtra
c) Jammu and Kashmir
d) Nagaland
Answer is :- Nagaland

108) The polar plot of $G(S) = 10/s(s+1)^2$ intercepts real axis at w = wo. Then, the real part and wo are given by?
Answer is :- –5, 1